

CLAIMS

1. A load carrying axial positioner with overload energy absorption, the positioner comprising:
 - an outer tube having first and second ends;
 - a threaded actuator rod extending axially between the first and
 - 5 second ends of the outer tube;
 - a drive operable to rotate the actuator rod;
 - a threaded member threadably mounted on the actuator rod and axially movable between the ends of the outer tube, the threaded member including a radial flange extending toward the outer tube;
 - 10 a radially extending load ring axially movable within the tube and spaced axially from the radial flange
 - a radially expandable spring positioned axially between the radial flange and the load ring, the spring operative to radially expand when compressed between the flange and the load ring to exert radial force against
 - 15 the outer tube, thereby generating resistance to axial motion of the load ring within the tube;
 - the load ring having a plurality of axially extending force transmitting elements extending through one end of the outer tube; and
 - the load ring with the force transmitting elements operatively
 - 20 engaging the threaded member for axial motion therewith.

2. A positioner as in claim 1 wherein the load ring and the force transmitting elements directly engage the member in one direction of motion and the load ring and the force transmitting elements indirectly engage the member through the spring in an other direction of motion.

3. A positioner as in claim 1 wherein a yieldable stop acts between the threaded member and the load ring to yieldably prevent the load ring from compressing the spring.

4. A positioner as in claim 3 wherein the yieldable stop is a shear pin.

5. A positioner as in claim 3 wherein the load ring is operative to exert a load on the stop.

6. A positioner as in claim 5 wherein the stop yields at a predetermined load of the load ring to allow the load ring to compress the spring.

7. A positioner as in claim 1 wherein a yieldable stop acts between the threaded member and the force transmitting elements to yieldably prevent the load ring from compressing the spring.

8. A positioner as in claim 7 wherein the yieldable stop is a shear pin.

9. A positioner as in claim 7 wherein the load ring is operative to exert a load on the yieldable stop.

10. A positioner as in claim 7 wherein the stop yields at a predetermined load of the load ring to allow the load ring to compress the spring.

11. A positioner as in claim 7 wherein abutments extending from the force transmitting elements directly engage the threaded member in one

direction of motion and the yieldable stops engage the threaded member in an other direction of motion.

12. A positioner as in claim 1 wherein the threaded actuator rod has teeth which shear under a predetermined load.

13. A positioner as in claim 3 wherein the yieldable stop is designed to shear before teeth of the threaded actuator rod.

14. A positioner as in claim 1 wherein the threaded member includes a threaded insert within the flange and engaging the actuator rod and at least one shear pin retaining the insert within the member.

15. A positioner as in claim 14 wherein the shear pin is designed to shear before teeth of the actuator rod.

16. A positioner as in claim 14 wherein the shearing of the pin separates the insert from the flange allowing the flange to move between the ends of the outer tube.

17. A positioner as in claim 1 wherein the spring is a wave spring.

18. A positioner as in claim 1 wherein the spring is a conic spring.

19. A positioner as in claim 1 wherein the drive is electromechanical.

20. A positioner as in claim 1 wherein the spring is radially expanded by compression loads acting on the force transmitting elements.

21. A positioner as in claim 1 wherein the spring is radially expanded by tension loads acting on the force transmitting elements.